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The Reality of North Korea's R&D Status as Seen Through Kim Jong Un's Recent Flood Response Directives

Sang-jung Byun
(Senior Research Fellow, INSS)
Seungwoo Kim
(Research Fellow, INSS)

INSS INSTITUTE FOR NATIONAL SECURITY STRATEGY
국가안보전략연구원

Abstract

On August 9, Kim Jong Un delivered a speech in flood-affected areas, instructing the establishment of permanent safety measures to "ensure that future flood damage does not occur." He directed the implementation of scientific and technological initiatives, including ensuring the provision of domestic water in flood-stricken regions, inspecting the safety of residential houses and public buildings, designing and constructing embankments, and improving crop ecology. Additionally, Kim emphasized the need to prevent recurring damage from extreme weather, manage dams at power plants and reservoirs, and develop scientific water management systems and comprehensive flood forecasting systems. He urged the authorities to "establish a rapid weather notification system to prevent foreseeable damage from ever happening." Research and development related to flood countermeasures at research institutions and universities, as reported by the *Rodong Sinmun*, have been prioritized, sidelining other research projects due to Kim's directives. In North Korea, Kim's instructions automatically translate into science and technology 'policies,' with his directives given the highest priority. All scientific and technological research institutions, including the State Academy of Sciences, Kim Il Sung University, and Kim Chaek University of Technology, are mandated to formulate and implement mid- to long-term science and technology development plans, along with annual plans that incorporate Kim's 'policy' tasks. These 'policy' tasks serve as critical indicators for evaluating the research and development capabilities and achievements of these institutions. However, Kim's unconditional directives—to "ensure that future flood damage does not occur" and "prevent foreseeable damage from ever happening"—pose significant challenges for North Korean scientists and researchers to achieve solely through "self-reliance." While North Korea has positioned "self-reliance based on modern science and technology" as an essential

principle in building a socialist economic powerhouse, the "accumulation of capital" is crucial for successful research and development. North Korea recognizes that "there can be no development of science and technology without investment." However, the regime's lack of capital makes executing these tasks particularly challenging. Research and development funds are calculated at state-fixed prices, but expenditures primarily occur at market prices. The regime demands that scientists and engineers dedicate themselves to developing science and technology, evaluating their 'loyalty' and 'competence' based on performance. Yet, regardless of the extent of performance incentives and penalties, substantial research outcomes that "ensure that future flood damage does not occur" remain unlikely in the context characterized by deprivation. As a closed country that restricts internet access for 'regime survival' and isolates itself from the international community, North Korea prioritizes scarce resources for nuclear and missile development over economic growth that could improve citizens' livelihoods. This self-isolation inherently limits the country's capacity to advance its science and technology. Kim Jong Un's misguided perception—overlooking the realities of research and development while pressuring for results to improve living standards—hinders the advancement of North Korean science and technology. Additionally, once flood recovery is completed, the urgency surrounding flood response dissipates, giving way to new tasks associated with Kim's 'policies,' leading to repeated inefficiencies in research and development. Such inefficiencies and wastefulness are inherent to the socialist system, which has historically prompted reforms and transitions in former socialist countries, including the Soviet Union and China.

Keywords

North Korea, Kim Jong Un, Flood Measures, 'Policy' Tasks, Science and Technology, Research and Development, Self-reliance

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Sang-jung Byun
(Senior Research Fellow, INSS)
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Kim Jong Un's Directives on Flood Measures

On August 9, Kim Jong Un delivered a speech in flood-affected areas, instructing the establishment of permanent safety measures to "ensure that future flood damage does not occur." He directed the implementation of scientific and technological measures such as ensuring domestic water supply in flood-stricken regions, inspecting the safety of residential houses and public buildings, designing and constructing embankments, and enhancing crop ecology. Additionally, Kim emphasized the need to prevent recurring damage from extreme weather, manage dams at power plants and reservoirs, and establish scientific water management systems and comprehensive flood forecasting systems. He urged authorities to "establish a rapid weather notification system to prevent foreseeable damage from ever happening.“

Kim Jong Un's 'Policy' as Top Priority in R&D

At that time, research and development related to flood countermeasures at research institutions and universities, as

reported by the *Rodong Sinmun*, were being promoted as "top priority," sidelining other research projects due to Kim Jong Un's directives.[1] In North Korea, Kim Jong Un's directives automatically become 'policies' in the science and technology sector, making the projects he highlights the highest priority for scientific research, development, and technology introduction.

All scientific and technological research institutions—including the State Academy of Sciences, Kim Il Sung University, and Kim Chaek University of Technology—must formulate and implement mid- to long-term science and technology development plans, along with annual plans that include Kim's 'policy' tasks. These 'policy' tasks serve as critical indicators for evaluating the research and development capabilities and achievements of these institutions.

Since the emphasis on economic development based on science and technology at the 4th Party Congress in 1961, North Korea has maintained a core commitment to 'valuing science and technology' for economic advancement. Following Kim Il Sung's death in 1994, Kim Jong Il declared in 1999 that "science and

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1) [Reports on Flood Countermeasure R&D in *Rodong Sinmun*]
Scientists from the Academy of Agricultural Sciences dispatched to flood-affected areas are applying fungicides, fertilizers, and growth promoters to rice paddies submerged for more than five days, working to improve crop growth and minimize damage. (*Rodong Sinmun*, August 10)
The Academy of Sciences supplied plant nutrients, compound fertilizers, and bio-activators; Kim Il Sung University provided compound nutrient solutions and mineral nutrient disinfectants; and Kim Chaek University of Technology supported the flood-hit regions with dozens of water treatment devices. (*Rodong Sinmun*, August 12)
Research projects at Kim Il Sung University, Kim Chaek University of Technology, and Pyongyang University of Computer Technology aim to enhance weather forecasting accuracy using artificial intelligence. (*Rodong Sinmun*, August 12)
Kim Il Sung University and Hamhung University of Hydraulic Power are conducting research on safety evaluations and flow control programs for hydroelectric power plants and reservoir dams. (*Rodong Sinmun*, August 12)
The State Academy of Sciences is supporting flood-affected areas with construction accelerators, water purification equipment, and conducting research projects to develop advanced water purifiers and ultrasonic measuring equipment. (*Rodong Sinmun*, August 17)
Kim Chaek University of Technology has independently developed a "solar radiation intensity measuring device" for meteorological observations. (*Rodong Sinmun*, August 19)

technology are the driving force for building a powerful nation," asserting that the revival and development of the homeland rely on scientists and technicians. In 2018, Kim Jong Un highlighted the 'patriotism' and 'dedication' of scientists and technicians stating that "science and technology are the locomotive of socialist nation-building, and the track of science and technology is self-reliance."

Kim Jong Un had sought opportunities for sanctions relief through a peace offensive towards South Korea and the first U.S.-North Korea summit on the nuclear issue in 2018. However, Kim revised his external strategy at the 1st Session of the 14th Supreme People's Assembly in April, following the breakdown of the Hanoi U.S.-North Korea summit in February 2019. He signaled his intention to confront the U.S. while pursuing self-reliance in science and technology amid prolonged sanctions.

Kim Jong Un's Enforcement of Research and Development Through Self-Reliance

Following the breakdown of the Hanoi summit, Kim Jong Un emphasized a "frontal breakthrough" strategy at the 5th Plenary Meeting of the 7th Central Committee in late December 2019, asserting that "the inexhaustible strategic asset we rely on today is science and technology." He urged that science and technology should lead economic development, with specific tasks outlined as follows:

1. Provide effective policy guidance for scientific research projects
2. Organize efforts to unconditionally complete the research tasks outlined in the "Ten Long-Term Outlook Goals" within designated deadlines, involving the State Science and Technology Commission, the State Academy of Sciences, scientific research and educational institutions, and ministries and central agencies
3. Closely integrate education, scientific research, and production

4. Cultivate talented personnel and produce valuable scientific and technological achievements (*Rodong Sinmun*, December 30, 2019)

Notably, the Korean Central News Agency (KCNA) reported that plans were being established for each indicator of the "Ten Long-Term Outlook Goals." Two years later, after the 8th Party Congress concluded in January 2021, Premier Kim Tok Hun announced at the 4th Session of the 14th Supreme People's Assembly on January 17, during the "Cabinet Work Report," that the party "will meticulously organize efforts to unconditionally complete the research tasks outlined in the "Ten Long-Term Outlook Goals" of the science and technology sector within the designated deadlines so that science and technology can lead the country's economic development" (KCNA, January 18, 2021).

However, there were no subsequent propaganda reports from North Korean media claiming that the "Ten Long-Term Outlook Goals" of the science and technology sector had been achieved. At the end of December 2021 (December 27-31), during the 4th Plenary Meeting of the 8th Central Committee, Kim Jong Un reiterated the need for clear scientific and technological measures to develop the economy and overall state affairs. The key task for the science sector presented by Kim Jong Un at that time was "to clearly establish scientific and technological measures to develop the country's overall affairs, including the economic sector, in a balanced and simultaneous manner."

Kim Jong Un's remarks during this meeting suggest accountability for the lack of balanced development between civilian and military industries. While advancements in the defense science and technology sector, particularly in nuclear and missile capabilities, have been evident, the focus on economic development through science and technology has shown poor performance.

The Reality of Research and Development in North Korea

Kim Jong Un's misunderstanding of research and development realities, coupled with his pressure for tangible achievements to enhance living standards, arguably represents the primary obstacle in advancing North Korean science and technology. National-level investments and necessary conditions for the science and technology sector are insufficient. North Korean research institutions lack critical resources, including funding, research environments, and technological materials. As a closed country that restricts internet access for "regime survival" and isolates itself from the international community—prioritizing scarce resources for nuclear and missile development over economic growth aimed at improving livelihoods—North Korea faces inherent limitations in advancing its science and technology through self-reliance.

Except for select fields like national defense and basic sciences, North Korea struggles to develop advanced and core technologies independently due to insufficient equipment, manpower, and investment. Additionally, profit generation is concentrated in limited sectors, with minimal reinvestment into research and development, hindering the essential input-output cycle in science and technology (Lee Chun-geun & Kim Jong-seon, 2015). Furthermore, stringent international sanctions have halted technological exchanges and cooperation with advanced nations, limiting opportunities for student exchanges abroad. The lack of internet access also obstructs the absorption of advancements in global science and technology, complicating the transition to a knowledge-based economy.

Kim Jong Un's 'Policies' Cannot Be Implemented Through Self-Reliance Alone

Kim Jong Un's unconditional directives—"ensuring that future flood

damage does not occur" and "preventing foreseeable damage from ever happening"—present significant challenges for North Korean scientists and researchers to achieve solely through "self-reliance.“

While North Korea emphasizes "self-reliance based on modern science and technology" as a crucial principle in its pursuit of a socialist economic powerhouse, the essential element for research and development is the "accumulation of capital." The regime acknowledges that "there can be no development of science and technology without investment" (*Rodong Sinmun*, December 23, 2023).

In a context marked by a lack of capital accumulation, even tasks labeled as Kim Jong Un's 'policies' encounter substantial execution challenges. Research and development funds are calculated at state-fixed prices, while expenditures primarily occur at market prices. The regime expects scientists and engineers to commit to science and technology development, with their "loyalty" and "competence" assessed based on performance. However, despite the imposition of performance-based incentives and penalties, it is unlikely that substantial research outcomes—necessary to "ensure that future flood damage does not occur"—will emerge from a context of "deprivation."

In addition, once flood recovery is completed, the urgency of flood response diminishes, leading to a shift in focus toward new 'policy' tasks, perpetuating cycles of inefficient research and development. These inefficiencies are intrinsic to the socialist system, which has historically led former socialist countries, including the Soviet Union and China, to undergo reforms and systemic transitions.

The views and opinions expressed in this report are those of the author(s) and do not necessarily reflect the official position of INSS.